phenomena in the region of the South Bavarian high plateau, and also in the Bavarian Alps," to Dr. A. Penck, of the Munich University. The work treats of the last glaciation of Upper Bavaria and North Tyrol, of older glaciations in the same districts, and of the formation of the Upper Bavarian lakes. A complete description of the effects of ice action in the defined localities, is given, also a comparison with those of North Germany and Scandinavia, and the concluding chapter has an able discussion on the causes of the Glacial epoch.——At a recent meeting of the Geological Society of London, Mr. D. Mackintosh gave the results of observations on the positions of boulders relatively to the ground around and below them. His investigations were carried on near Llangollen (Wales) and at Clapham (Yorkshire) and his results are, that the average *vertical extent* of the denudation of limestone rock around boulders has not been more than six inches, and that this denudation has been at a rate of not less than an inch in a thousand years. This gives not more than 6000 years since the boulders were deposited.

Recent.—The Rev. A. Irving (*Geological Magazine*, April) gives the classification of landslips adopted by Herr Heini, of Zurich. These "Bergstürze" are either "Schuttrutschungen" or descents of water-logged accumulations from the mountain slope into the valley, a movement which sometimes produces striations simulating those of glacial action; "Schuttstürze," or emptyings upon the valley below of loose material, accumulated in a minor valley on the mountain side; Felsschlipfe," or loosenings of the upper strata, when the general dip is towards the valley, by the erosion of the lower part of the sides into a slope much deeper than the dip slope of the strata of the mountain above; and "Felsstürze," or the breaking loose from the sides of the mountain of huge masses of rock.

MINERALOGY.[1]

Scovillite, a new mineral.—Professors G. J. Brush and S. L. Penfield have described[2] an interesting mineral from the Scoville ore bed in Salisbury, Conn., which occurs as an incrustation on certain iron and manganese ores. The incrustation, one-sixteenth of an inch or less in thickness is sometimes botryoidal or stalactitic in form and in cross fracture has a radiated, fibrous structure. It thus resembles in its mode of occurrence similar coatings of gibbsite. It has a pinkish, brownish, or yellowish-white color, a silky to vitreous lustre on the fracture, but has a greasy look on the natural surfaces, resembling some varieties of chalcedony or smithsonite. Hardness=3. 5. Specific gravity 3.94–4.01.

[1] Edited by Professor H. Carvill Lewis, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.

[2] *Amer. Journ. Sc. and Arts*, June, 1883.

Fused with salt of phosphorus and borax it gives a remarkable rose-colored bead in both flames. It is soluble in acid. The following mean composition was obtained:

P_2O_5	(Y_2O_3,Er_2O_3)	(La_2O_3,Di_2O_3)	Fe_2O_3	H_2O, (combined)	H_2O (lost at 100°)	CO_2
24.94	8.51	55.17	.25	5.88	1.49	3.59 = 99.83.

Regarding the CO_2 as unessential and due to an admixture of lanthanite, the composition of the remaining mineral is calculated as follows:

P_2O_5	$(Y,Er)_2O_3$	$(La,Di)_2O_3$	Fe_2O_3	H_2O
30 12	10.28	55.73	.30	3.57 = 100

The mineral is therefore a hydrous phosphate of the cerium and yttrium metals and is a new species. The mineral churchite approaches it most nearly in composition. The name Scovillite is proposed for it, after the locality where it was found.

THE ARTIFICIAL FORMATION OF MINERALS AND ROCKS.—Nearly all the interesting researches that have been made in forming minerals by artificial means are due to the chemists and mineralogists of France. Among these none are of more importance than those performed by Messrs. Fouqué and Michel-Lévy in the formation of various volcanic rocks and minerals through fusion. Recently they have collected their researches, heretofore scattered in several periodicals, in the form of an important volume entitled "Synthèse des mineraux et des roches." They employed platinum crucibles encased in fire clay and kept at a high heat for several days by means of a gas blast. By making use of the principle that minerals crystallize from the fluid magma in the inverse order of their fusibilty, and by keeping the melted minerals at different temperatures, carefully chosen, a number of artificial products closely resembling natural minerals and rocks were produced. Thus from a fused mixture of anorthite and augite, plagioclase crystals were obtained by a white heat, kept up for forty-eight hours, and on a second heating at a lower temperature augite crystals were formed, and the characteristic structure of an ophitic diabuse was obtained.

Most of the basic basaltic rocks were thus artificially formed by one or more fusions of a mixture of minerals. The acidic rocks, or those containing quartz, orthoclase, muscovite, hornblende, &c., could not thus be produced. An amorphous or glassy mass was obtained, and the latter minerals would not crystallize out of a fused mass.

The interesting conclusion is therefore reached that granite, gneiss, and other acidic rocks, with their enclosed minerals are not the result of igneous fusion. This is in accord with the generally accepted belief of geologists, derived from many considerations.

CONCRETIONS IN METEORITES.—Dr. J. L. Smith[1] describes a number of nodular or globular concretions which occur in metecrites, and states that the presence of such concretions is the general rule in meteoric iron.

The most common concretions are of troilite, a sulphide of iron. These have a dark bronze color and are numerous and often of large size. The troilite is often penetrated by a bright yellow mineral known as schreibersite, a phosphide of iron and nickle. Graphite also sometimes forms nodular concretions, and is commonly mixed with troilite. Daubreelite is another interesting mineral mixed with troilite, being a sulphide of iron and chromium. A concretion of chromite was found in one meteorite. The chromite was black, but a thin section under the microscope was of a deep red color. Lawrencite, a green protochloride of iron, and aragonite also occur in meteoric iron, the aragonite, however, being probably of secondary origin.

Dr. Smith thinks that the presence of these concretions indicates a former plasticity of the iron, caused by great heat.

MINERALOGICAL NOTES.—A new edition of E. S. Dana's Text book of Mineralogy has just been issued. The list of new minerals is brought up to date, and much important matter relating to the crystallographic and optical characters of minerals and to new instruments has been added.——A report on Virginia minerals by Mr. A. S. McCreath of Harrisburg, recently issued, contains numerous new analyses of ores, coals, &c., and will be of great value to practical men.——A variety of wad, to which the name *lepidophœite* has been given, occurs in Thuringia in fibrous or scaly masses, with silky lustre. It has a reddish brown color and soils the fingers when touched. It contains eleven per cent of oxide of copper.——Gonnard has described an occurrence of *gedrite* in the gneiss of Beauman, near Lyons. The mineral is in almond shaped masses, with lamellar or fibrous structure. The color is straw yellow to brown, and its characters are those of an anthophyllite containing alumina.——An *emerald* from Paavo, in Finland, analyzed by F. J. Wiik, was surrounded by a zone of radiated red albite, and this again by a yera of muscovite. ——*Wollastonite* has been obtained artificially by L. Bourgeois by melting together the required amounts of lime and silica at a bright red heat and cooling for two days in a furnace. A mass of acicular crystals was obtained, which, however, had optical properties unlike those of the natural mineral.——*Siderite* of a light green color occurs on hematite in the Lake Superior district, and is often associated with calcite. It is found either in crusts or in single crystals.

[1] *Amer. Journ. Sc.*, June, 1883.